OPERATION MANUAL

Model : DC-190

Edition

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1. INTRODUCTION

The DC-190 series efficiently satisfies all the application requirements, 1/1,000,000 high internal resolution, 200 item memory, battery operation, and capability to expand the system with standard 3 x RS-232C and 1 x setpoint interface. We prepared pole type version for a diverse range of working conditions and locations.

1. Features

1.1 Display

- Weight Display: 5 digits + Decimal figure
- Unit Weight Display: 5 digits + Decimal figure
- Quantity Display: 7 digits

1.2 Analogue Parts

- Display Resolution: 1/10000, 1/5000, or 1/2500
- Internal Resolution: 1/1,000,000 or 1/500,000
- A/D conversion Rate: 10 times per second
- The number of scales: 4 scales at maximum
  (3 load cell scales + 1 force balance scale.)
- The number of load cell per scale: 4 x 350 Ω load cells when connected in parallel
- Excitation Voltage: 12VDC

1.3 Capacity Variation (DIGI S-X Platform Scales)

MODEL	Capacity	
1 Scale Type	500g 1kg 2.5kg 5kg 10kg 25kg 50Kg	
2 Scale Type	Scale 1= 500g Scale 1= 500g Scale 1 = 1kg Scale 1 = 1kg	Scale 2 = 2.5kg Scale 2 = 5kg Scale 2 = 5kg Scale 2 = 10kg

1.4 Interfaces

- RS-232C Interface: DIN 8 Pin (Bar-code scanner)
- RS-232C Interface: DIN 8 Pin (Either one of force balance, PC, or Printer)
- RS-232C Interface: D SUB 9 PIN (Either one of force balance, PC or Printer)
- 24V Open Corrector: Min DIN 8 Pin (Setpoint Output)

1.5 Memory Item

- 200 Item Memory
- Memory Field

Parameters	Max. length
Item Code	12 digits numeric data or 16 digits alphanumeric data
Parts No.	12 or 16 digits numeric data
Parts Name	20 letters
Tare Weight	5 digits + Decimal figure
Unit Weight	5 digits + Decimal figure
Inventory	8 digits
Setpoint Value	Max 6 points

1.6 Options

- Pole Kit for DI-190
- Battery for S-X platform

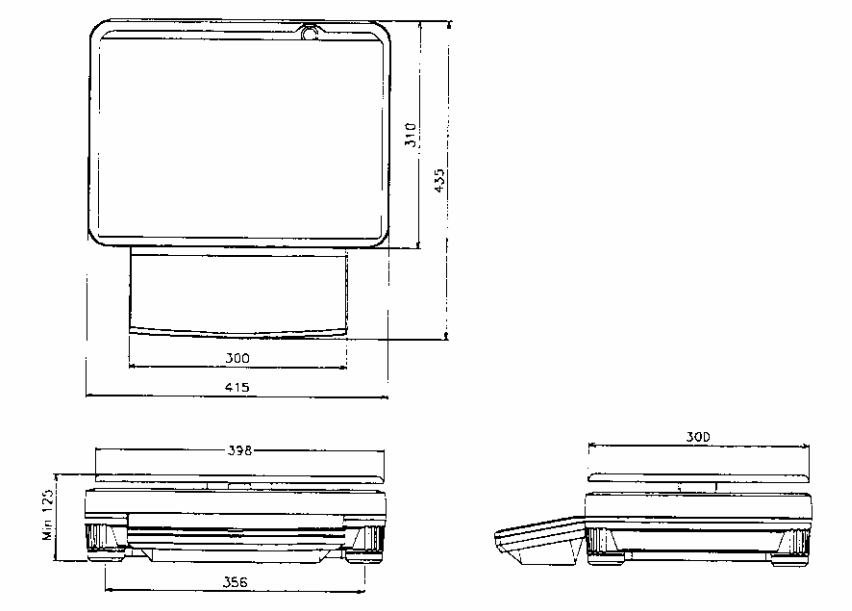
1.7 Power Block

- Operation Voltage: AC 100V-117V or 220V-240V (factory preset)
- Operating Frequency: 50/ 60 Hz
- Power Consumption: 20W
- Operating Temperature: -10°C - 40 °C
- Operating Humidity: 10% - 80% RH

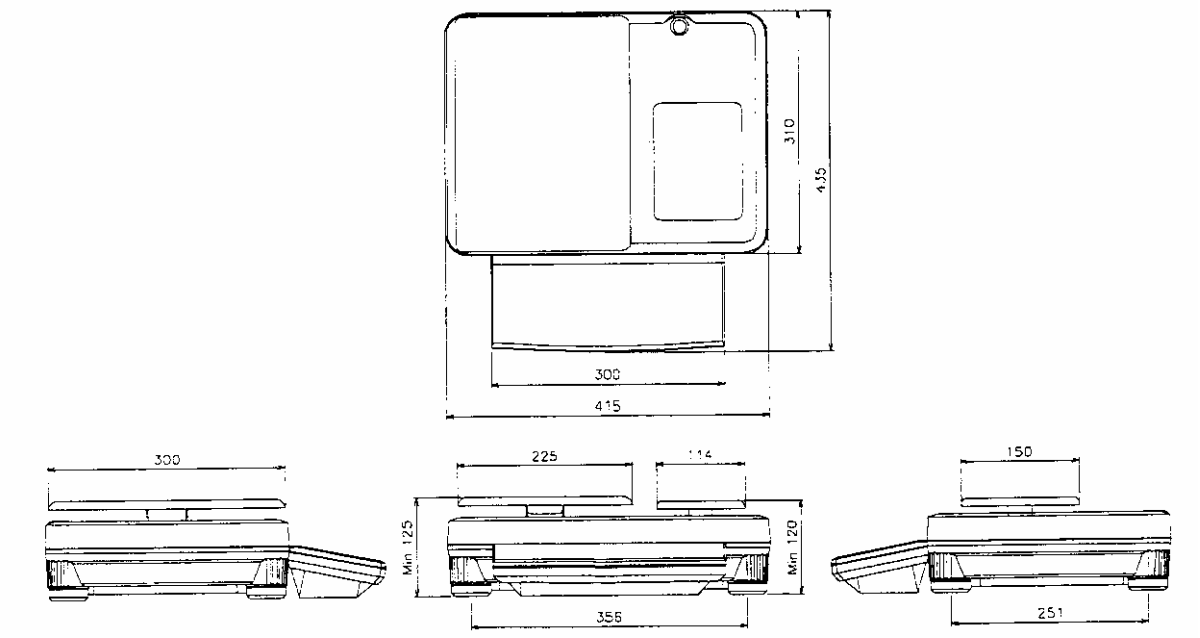
2 CONFIGURATION

2.1 Outside Dimensions and View

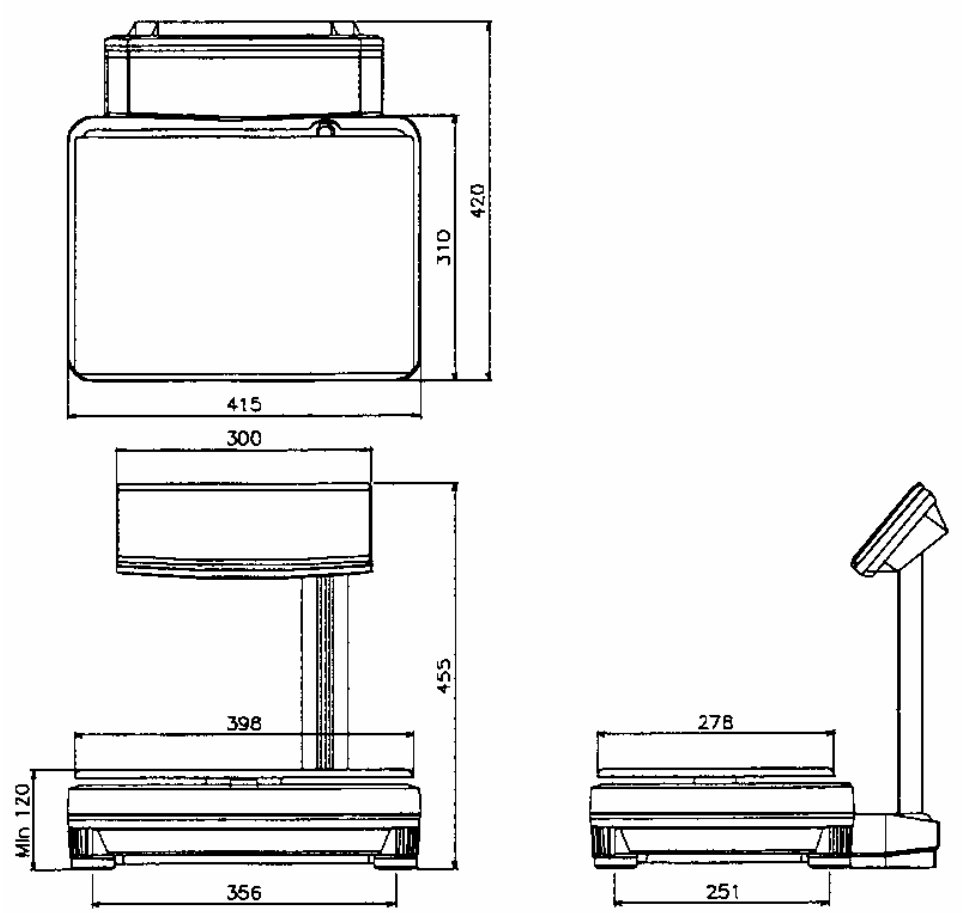
BENCH TYPE (1 SCALE TYPE)



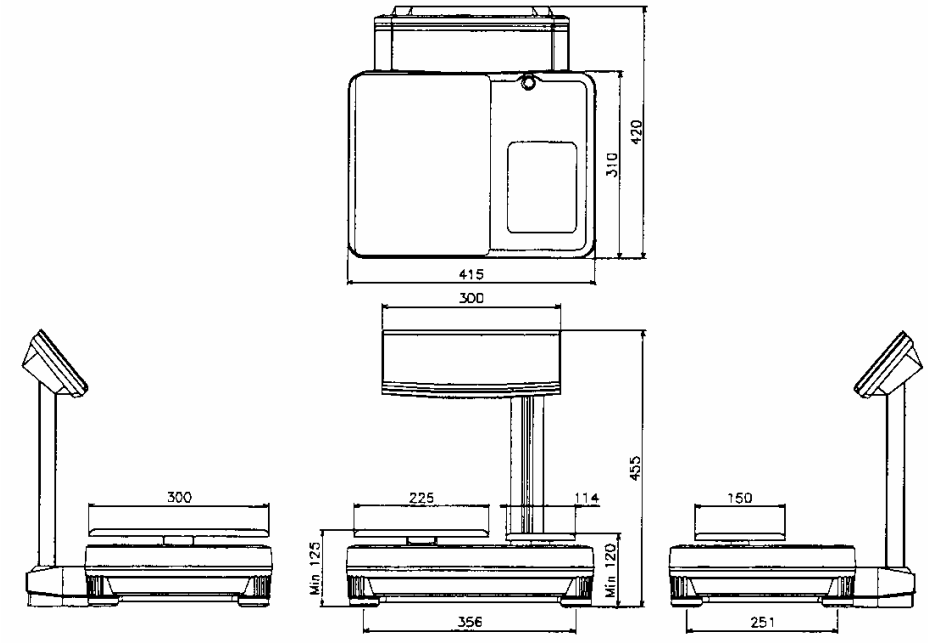
BENCH TYPE (2 SCALE TYPE)



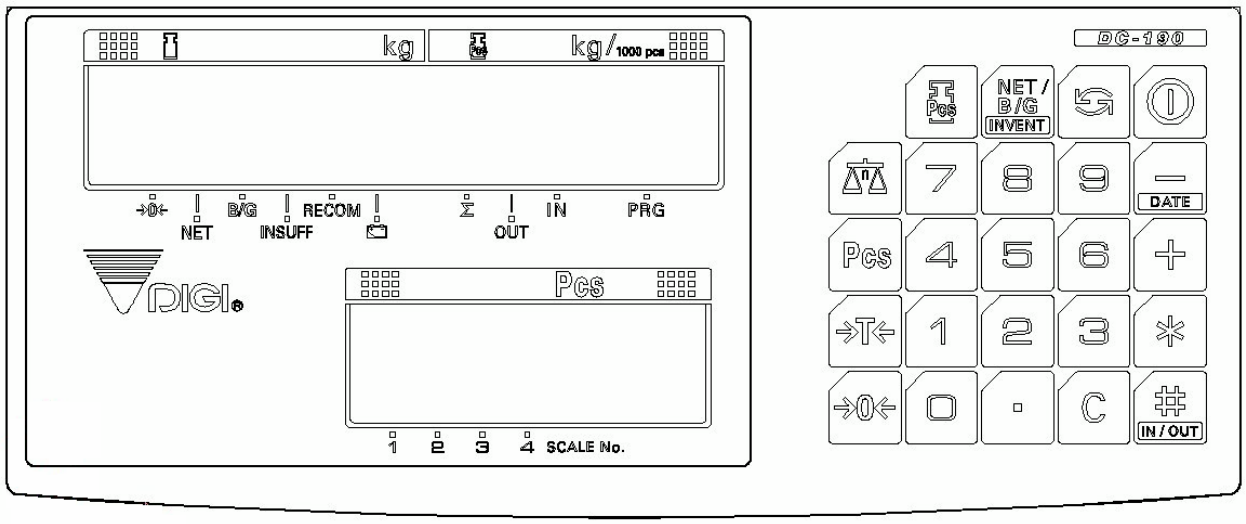
POLE TYPE (1 SCALE TYPE)



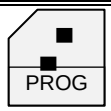
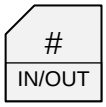
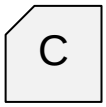
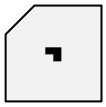
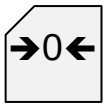
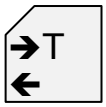
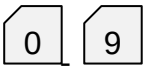
POLE TYPE (2 SCALE TYPE)



2.2 Keyboard and Display



Function Keys	Descriptions of Keys
On/ Off Key	Turn on and off display. (It is not main power switch)
Mode Key	Toggle between the operation mode and the program mode. The PRG lamp is lit when the scale is in the program mode.
NET/ B/G INVENT Net/ Gross Key	Toggle between the net weight and gross weight. The GROSS lamp is lit when the scale is in the gross mode.
Pcs Unit Weight Key	Enter unit weight (per 1000 pcs).
Kg/lb Kg-lb Key	Toggle display between pound and kilogram. When scale shows kilogram weight, KG lamp is lit. *(US version only)*
- DATE Minus Key	Subtract a quantity of parts in an accumulation operation. Set the date and time in program mode.
+ Plus Key	Add a quantity of parts in an accumulation operation.

Function Keys		Descriptions of Keys
	Enter Key (Total Key)	Total an accumulation operation. Save the program data in the memory in program mode.
	CODE Key	Call up an item code. Toggle between add(IN) or subtract (Out) from item inventory.
	Clear Key	Clear keyed-in data.
	Decimal Key	Enter decimal point. Display the item code in use after calling item code.
	Zero Reset Key	Reset the weight value to zero. (This key is effective when scale is stable.)
	Tare Key	Subtract or clear the tare value.
	Pieces Key	Calculate/enter an unit weight by sampling operation. When RECOM lamp is lit, re-calculate unit weight for higher accuracy.
	Scale Key	Toggle between scales if the system is connected with multiple scales. The scale number is indicated in quantity window.
	Numeric Keys	Enter numeric data.

Indicators		Descriptions of Indicators
→0←	ZERO Lamp	Weight is stable at zero point.
NET	NET Lamp	Presence of tare weight (display shows net weight)
GROSS	Gross Lamp	Scale is in gross weight display mode.
INSUFF	Insufficient Lamp	Sample weight is too small to calculate unit weight.
RECOMP	Recomputing Lamp	Unit weight may be re-computed for higher accuracy.
MEMORY	Memory Lamp	Accumulated data is in memory.
IN	IN (Receiving) Lamp	Add a quantity of parts to item inventory.
OUT	OUT (Shipping) Lamp	Remove a quantity of parts from item inventory.
MODE	MODE Lamp	Scale is in program mode.
SCALE NO.	Scale No. Lamp 1-4	Scale number in use
KG	Kilogram Lamp	Scale weighing in kg. (US version only)

3. Operation mode

3.1 Tare Subtraction

3.1a One touch tare (Semi-automatic Tare)

This function is used for subtracting tare value of an empty container.

Indicators: Z=Zero,N=NET,G=Gross,
I=Insufficent,R=Recompute,M=Memory

Procedure	Key-in	Weight	Unit Wt.	Quantity	Indicators					
					Z	N	G	I	R	M
Ready for operation		0.000	0	0	▙			▙		
1. Place a container onto the platter.		0.045	0	0						
2. Enter the tare value.	[TARE]	0.000	0	0		▙		▙		
3. Place parts onto the container.	e.g. 0.1kg	0.100	0	0		▙				

3.1b Digital Tare (Preset Tare)

This function can be used when tare weight value is known. It is used for subtracting tare value of a pre-filled container.

Indicators: Z=Zero,N=NET,G=Gross,
I=Insufficent,R=Recompute,M=Memory

Procedure	Key-in	Weight	Unit Wt.	Quantity	Indicators					
					Z	N	G	I	R	M
Ready for operation		0.000	0	0	▙			▙		
1. Enter the tare value by key pad.	[0],[.],[0],[5]		0.05							
2. Press [TARE] key.	[TARE]	-0.050	0	0	▙	▙				
3. Place container.	e.g. 0.15kg	0.100	0	0		▙				

NOTE:
To clear tare value, press [0] then [TARE] key. Or, press [TARE] key after removing all the weight from the platter.

3.2 Unit Weight Entry

3.2a Unit Weight Entry by Sampling

The machine can compute the average unit weight of parts. This function requires operator to place representative samples, 10 pcs or more, on scale. By entering the sample quantity, the machine can calculate the average unit weight by computation with total weight of sample parts.

This section provides the explanations for insufficient sample and recomputing function which are useful for accurate counting operation.

Indicators: Z=Zero,N=NET,G=Gross,
I=Insufficent,R=Recompute,M=Memory

Procedure	Key-in	Weight	Unit Wt.	Quantity	Indicators					
					Z	N	G	I	R	M
Ready for operation		0.000	0	0	▙			▙		
1. Place sample parts.	e.g. 15 pcs	0.025	0	0						
2. Enter the number of parts. * 1)	[1], [5]		15							
3. Compute unit weight.	[PCS] key	0.025	1.6866	15						
When sample weight is not sufficient for accurate calculation, insufficient lamp is lit and the procedure 4 and 5 are required. (Refer to Insufficient Sample)										
4. Add the required samples. * 2)		ADD	0							
5. Compute unit weight again.	[PCS] key	0.029	1.6981	17						
The accuracy of the unit weight can be improved in *procedure 6 and 7*.										
6. Add more pieces. * 3)	e.g. 18 Pcs	0.059	1.6981	35					▙	
7. Re-compute unit weight	[PCS] key	0.059	1.6857	35						

Note * 1) If sample quantity is 10 pcs, press [PCS] key without entering the number of samples.
Note * 2) The procedure 4 and 5 can be skipped by pressing [PCS] without adding the samples. However, using an insufficient sample may adversely affect counting accuracy.
Note * 3) Re-compute operation is available when the RECOM lamp is lit.
Note 4) If multiple scales are connected to DC-190, perform the sampling operation with smaller capacity for more accurate unit weight.

INSUFFICIENT SAMPLE

If sample pieces are not sufficient for accurate counting, the Insufficient lamp is lit. After pressing [PCS] key with insufficient samples, the ADD XXX appears in the weight display. The number, XXX, followed by ”ADD” indicates additional XXX pieces required for accurate calculation.

The insufficient range can be selected in internal setting mode from 0.1% or 0.2% of full scale capacity.

RECOMPUTING FUNCTION

Re-computing function is used for improving the accuracy of the unit weight. The unit weight is determined by averaging the weight of the samples. The average unit weight can be more precisely determined by adding quantities, since a larger sample size makes the weight variance smaller. By this function, it is possible to start with small quantity, then amplify the sample quantity without manual counting. This function is available when the RECOMP lamp is lit.

3.2b Unit Weight Entry by key pad

This function can be used when unit weight is known. The recomputing function and the insufficient lamp are not available when entering unit weight through key pad.

Indicators: Z=Zero,N=NET,G=Gross,
I=Insufficent,R=Recompute,M=Memory

Procedure	Key-in	Weight	Unit Wt.	Quantity	Indicators					
					Z	N	G	I	R	M
Ready for operation		0.000	0	0	▙			▙		
1. Enter unit weight by key pad.	[1],[.],[6],[9],[8]		1.6980							
2. Press [UNIT WEIGHT] key.	[UNIT WEIGHT]	0.000	1.6980	0	▙					

NOTE:
To clear unit weight value, press [CLEAR] key.

3.3 Parts Counting

The bulk quantity can be counted, after entering the unit weight by any means of 3.2 unit weight entry.

3.3a Single Transaction

Indicators: Z=Zero,N=NET,G=Gross,
I=Insufficent,R=Recompute,M=Memory

Procedure	Key-in	Weight	Unit Wt.	Quantity	Indicators					
					Z	N	G	I	R	M
Ready for operation		0.000	0	0	▙			▙		
1. Enter unit weight by any means of 3.2 Unit Weight Entry.		0.000	1.6980	0						
2. Place bulk quantity.		0.145	1.698	84					▙	
3. Press [ENTER] key. * 1)	[ENTER]	0.000	1.698	84					▙	

Note *1) If DC-190 is connected to bar-code printer/PC, the label is printed /the data are output by pressing [ENTER] key.

3.3b Accumulation

This section shows how to accumulate a parts count from a series of containers.

Indicators: Z=Zero,N=NET,G=Gross,
I=Insufficent,R=Recompute,M=Memory

Procedure	Key-in	Weight	Unit Wt.	Quantity	Indicators					
					Z	N	G	I	R	M
Ready for operation		0.000	0	0	■			■		
1. Enter Unit weight by any means of 3.2U.W. Entry		0.000	1.6980	0	■					
2. Place bulk quantity.		0.145	1.6980	84						
3. Store the quantity in memory.	[+]	tOtAL		84						■
4. Remove parts from the platter.		tOtAL		84						■
5. Press [CLEAR] key.	[CLEAR]	0.000	1.6980	0	■					■
6. Place bulk quantity.		0230	1.6980	135						■
7.Store the quantity in memory.	[+]	tOtAL		219						■
8. Remove parts from the platter.		tOtAL		219						■
9. Press [CLEAR] key.	[CLEAR]	0.000	1.6980	0	■					■
10. Place bulk quantity		0.030	1.6980	19						■
11. Subtract the quantity in memory.	[-]	tOtAL		200						■
Repeat the procedure 2-11.		tOtAL		200						
12. Clear the accumulated data.	[ENTER]	0.000	1.6980	0	■					

Note 1) If DC-190 is connected to bar-code printer/PC, the label is printed /the data are output by pressing [+], [-] and [ENTER] keys.

Note 2) Memory lamp is lit when transaction is in memory.

3.3c Negative Counting Function

This feature counts the parts quantity by removing the parts from a bulk container on the platform.

Indicators: Z=Zero,N=NET,G=Gross,
I=Insufficent,R=Recompute,M=Memory

Procedure	Key-in	Weight	Unit Wt.	Quantity	Indicators					
					Z	N	G	I	R	M
Ready for operation		0.000	0	0	■			■		
1. Place the container with parts.		1.255	0	0						
2. Press [TARE] key.	[TARE]	0.000	0	0		■		■		
3. Take 10 pcs of parts from container.		-0.015	0	0		■				
4. Compute unit weight.	[PCS]	-0.015	1.4872	10		■				
5. Take bulk number from container.		-0.099	1.4872	66		■			■	
6. Press [ENTER] key.	[ENTER]	-0.099	1.4872	66		■			■	

Note *1) If DC-190 is connected to bar-code printer/PC, the label is printed /the data are output by pressing [ENTER] key.

3.4 Call Item Code in Operation Mode

This section shows how to recall item codes in operation mode. By calling item code in operation mode, the need to continually re-enter unit weight is eliminated. The parts number and the parts name are printed on the label, if your scale is connected to printer. (Refer to 4.1 Item Code programming.)

Your scale has an internal setting that decides character type for item code, 12 digits numeric data or 16 digits alphanumeric data. If you call alphanumeric item code, refer to 3.4b Recall alphanumeric item code.

3.4a Recall numeric item code

Indicators: Z=Zero,N=NET,G=Gross,
I=Insufficent, I=IN, O=OUT

Procedure	Key-in	Weight	Unit Wt.	Quantity	Indicators					
					Z	N	G	I	I	O
Ready for operation		0.000	0	0	▙			▙	▙	
1. Enter Item Code.	[1], [0], [0]		100							
2. Call Up Item Code *1)	[CODE]	0.000	1.6980	0	▙				▙	
3. Select “In-Out” status. *2)	[CODE]	0.000	1.6980	0	▙					▙
4. Add bulk parts on platter.		0.145	1.6980	84						▙
5. Press [ENTER] key.	[ENTER]	0.145	1.6980	84						▙

Note *1) If the code number has not been programmed, the display shows “not F”.
Note * 2) Parts “In-Out” Operation

- Inventory value can be pre-programmed to each item code. The inventory value is up-dated automatically by pressing [ENTER] key.
- When In lamp is lit, a quantity of item is added to item inventory. When Out lamp is lit, a quantity of item is removed from item inventory . When neither are lit, item inventory is not changed.
- In-Out status can be selected by pressing [CODE] key after calling up item code. The status is toggled between IN, OUT, NON ADD (NO CHANGE).

3.4b Recall alphanumeric item code

For most users, we recommend to connect the bar-code reader to recall alphanumeric item code, however, you can also enter the alphanumeric data with key pad of DC-190.

Indicators: Z=Zero,N=NET,G=Gross,
I=Insufficent, I=IN, O=OUT

Procedure	Key-in	Weight	Unit Wt.	Quantity	Indicators					
					Z	N	G	I	I	O
Ready for operation		0.000	0	0	▙				▙	
1. Press decimal key.	[•]	t-C 01	00-	CodE					▙	
2. Enter Item Code.	[0], [1]	t-C 01	01- A	CodE					▙	
e.g. ABC10 *1)	[0], [2]	t-C 02	02- b	CodE					▙	
	[0], [3]	t-C 03	03- C	CodE					▙	
	[3], [1]	t-C 04	31- 1	CodE					▙	
	[3], [0]	t-C 05	30- 0	CodE					▙	
3. Call Up Item Code.	[CODE]	0.000	1.6980	0	▙				▙	
4. Select "In-Out" status.	[CODE]	0.000	1.6980	0	▙					▙
5. Add bulk parts on platter.		0.145	1.6980	84						▙
6. Press [ENTER] key.	[ENTER]	0.145	1.6980	84						▙

Note *1) Refer to the character list on Appendix I.
Note 2) [C]: Used to delete character
[+] : Used to move cursor ahead
[-] : Used to move cursor back

Entry display of Alphanumeric data

Weight Display	Unit Weight Display	Quantity Display
t-C X_1X_1	**X_2X_2 - X_3**	**CodE**

Position of Cursor: These digits show the position of cursor.

Numeric Data: These digits show numeric data that are entered in key pad.

Convert Data: This digit shows the data that are converted from two numeric data (X_2X_2) to Alphanumeric data.

4. Program mode

4.1 Item Code Programming

4.1a Memory Field of Item Code

Item code allows you to store the following information for counting operation. Up to 200 item codes can be registered in DC-190.

ITEM CODE (Max length = 12 digits numeric or 16 digits alphanumeric data)
Item code is used as a reference code to call up item data. 12 digits numeric or 16 digits alphanumeric entry can be selected from internal setting. The following data are linked with each item code.

TARE WEIGHT (Max length = 5 digits, Numeric data only)
Tare weight can be registered by one touch tare or digital tare entry. If a certain container is not used in counting operation, you may skip to enter tare value.

UNIT WEIGHT (Max length = 5 digits, Numeric data only)
Unit weight can be registered by sampling or digital entry.

PARTS NAME (Max length = 20 digits, Alphanumeric data)
Max 20 digit letters can be programmed. Alphanumeric data can be entered though DIGI CHARACTER CODE.

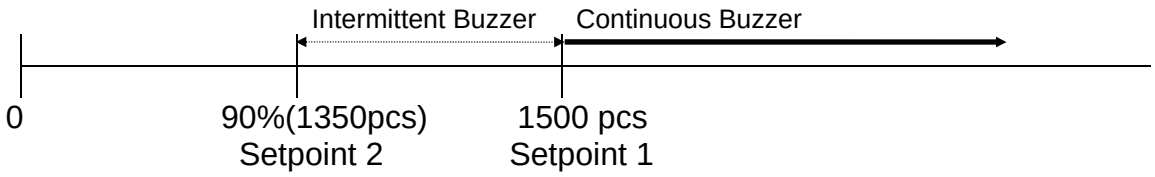
PARTS NO. (Max length = 12 or 16 digits. Alphanumeric data)
Maximum length of item code can be selected by internal setting from 12 or 16 digits. Alphanumeric data can be entered though DIGI CHARACTER CODE.

INVENTORY DATA (Max length = 8 digits, numeric data)
Inventory data are registered to each item code. The data are up-dated automatically after IN/OUT operation in operation mode.

SETPOINT DATA
Up to 6 setpoint values can be programmed to each item code. The data can be based on weight data or quantity data by internal setting. The setpoint signals are output though the setpoint interface when the quantity/ weight exceeds setpoint values.

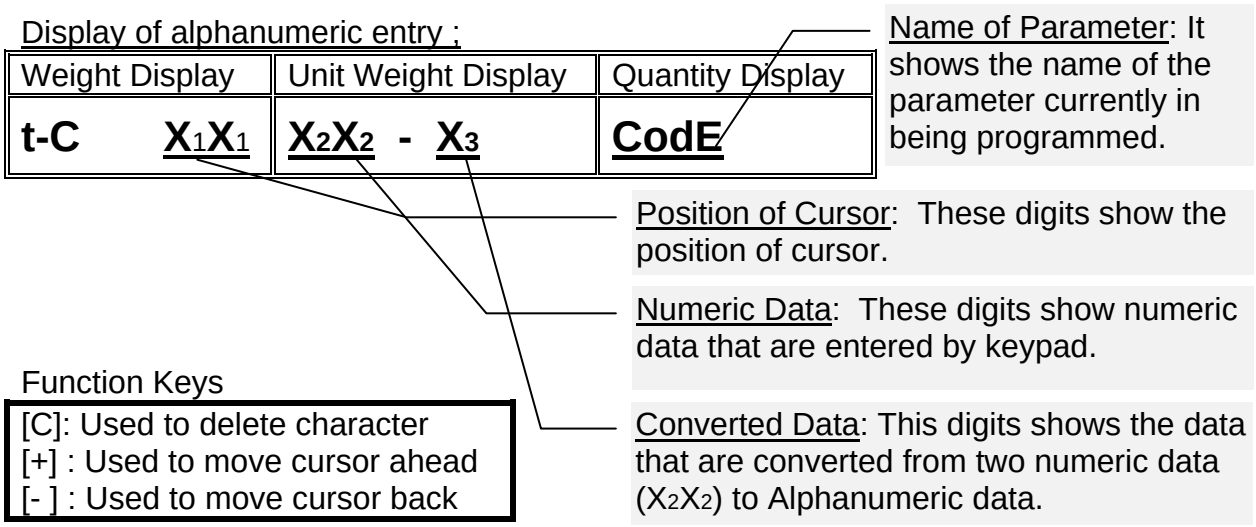
Setpoint 1 and Setpoint 2 can be utilized as alarm points. This function alerts the operator with an intermittent buzzer when the weight on the scale is between setpoint value 1 and setpoint value 2. Continuous buzzer also warns the operator when the quantity/ weight exceeds Setpoint 2. The setpoint alarm function is disabled, if no setpoint is programmed.

E.g.) SETPOINT 1= 1500 pcs
SETPOINT 2= 90 %



4.1b Alphanumeric data entry

Alphanumeric character can be programmed to parts no., parts name, and item code (by internal setting). Two digits of numeric data are converted to one alphanumeric character as shown on the table in Appendix I.


Display of alphanumeric entry ;
Weight Display
Unit Weight Display
Quantity Display
t-C X1X1
X2X2 - X3
CodE
Name of Parameter: It shows the name of the parameter currently in being programmed.
Position of Cursor: These digits show the position of cursor.
Numeric Data: These digits show numeric data that are entered by keypad.
Converted Data: This digits shows the data that are converted from two numeric data (X2X2) to Alphanumeric data.
Function Keys
[C]: Used to delete character
[+] : Used to move cursor ahead
[-] : Used to move cursor back

4.1c Program Item Code

Indicators: Z=Zero,N=NET,G=Gross,
I=Insufficent,R=Recompute,P=Program

Procedure	Key-in	Weight	Unit Wt.	Quantity	Indicators					
					Z	N	G	I	R	P
Ready for operation		0.000	0	0	▙			▙		
1. Go to Program Mode. * 1)	[MODE]	ProG		C 0						▙
2. Enter Item Code. *2)	[1],[2],[3]	ProG	123							▙
3. Press [CODE] key. *3)	[CODE]	0.000	0	0	▙			▙		▙
4. Enter tare weight by any means of 3.1 Tare Subtraction.		-0.120	0	0	▙	▙		▙		▙
5. Enter unit weight by any means of 3.2 Unit weight Entry.		0.145	1.6980	84		▙				▙
6. Press [NET/GROSS] key.	[NET/GROSS]		0	INVENT						▙
7. Enter Inventory Value.	[1], [5], [0], [0]		1500	INVENT						▙
8. Press [NET/GROSS] key.	[NET/GROSS]	0.145	1.6980	84		▙				▙

- Continue to the next page -

Note: *1) On the Top screen in program mode, the total number of item codes in memory, followed by “C”, appears on the quantity display.

Note: *2) To enter alphanumeric character to item code, press [•] key to change the screen to the display of alphanumeric entry.

Note: *3) If the entered item code to be programmed already is in memory, the message ”CLEAr” appears in quantity display. To clear item code, press [CLEAR] key. (Refer to 4.2a Delete a certain item code.) To go forward to check or change the data, press [CODE] key again.

- Continued -

Indicators: Z=Zero,N=NET,G=Gross,
I=Insufficent,R=Recompute,P=Program

Procedure	Key-in	Weight	Unit Wt.	Quantity	Indicators					
					Z	N	G	I	R	P
9. Press [-] key.	[-]	T-C 01	00-	PArt No						▙
10. Enter Parts No.	[3], [3]	T-C 01	33 - 3	PArt No						▙
e.g. 30Z2TH	[3], [0]	T-C 02	30 - 0	PArt No						▙
	[2], [6]	T-C 03	26 - Z	PArt No						▙
	[3], [2]	T-C 04	32 - 2	PArt No						▙
	[2], [0]	T-C 05	20 - T	PArt No						▙
	[0], [8]	T-C 06	08 - H	PArt No						▙
11. Press [∗] key.	[∗]	0.145	1.6980	84		▙				▙
12. Press [CODE] key.	[CODE]	T-C 01	00 -	P-NAmE						▙
13. Enter Parts Name.	[1], [9]	T-C 01	19 - S	P-NAmE						▙
e.g. SCREW	[0], [3]	T-C 02	03 - C	P-NAmE						▙
	[1], [8]	T-C 03	18 - R	P-NAmE						▙
	[0], [5]	T-C 04	05 - E	P-NAmE						▙
	[2], [3]	T-C 06	23 - W	P-NAmE						▙
14. Press [CODE] key.	[CODE]	0.145	1.6980	84		▙				▙
15. Press [+] key.	[+]	SET 1		0						▙
16. Enter Setpoint 1 value.	[1], [0], [0]	SET 1		100						▙
17. Press [+] key.	[+]	SET 2		0.						▙
18. Enter Setpoint 2 value. E.g.50%	[5], [0]	SET 2		50						▙
19. Press [+] key.	[+]	0.145	1.6980	84		▙				▙
20. If required, enter Setpoint 3-6 with the same procedures as 15 to 19.										▙
21. Store the data.	[ENTER]	ProG		C 1						▙

Note: *3) DC-190 has internal setting to select setpoint parameters from the combinations shown in the following table. Enter data to each parameters of setpoint correspondingly to the following samples.

Setpoint 1	Setpoint 2-6	sample
Quantity	percentage of setpoint 1 value	S1=**1000**pcs S2=**90**%
Weight	percentage of setpoint 1 value	S1=**2.000** kg S2=**90**%
Quantity	Quantity	S1=**1000**pcs S2=**900**pcs
Weight	Weight	S1=**2.000** kg S2=**1.800** kg

4.2 Delete Item Code in memory

4.2a Delete a certain item code

Procedure	Key-in	Weight	Unit Wt.	Quantity	Indicators					
					Z	N	G	I	R	P
Ready for operation		0.000	0	0	▙			▙		
1. Go to Program Mode.	[MODE]	ProG		C 20						▙
2. Enter item code to delete.	[1],[2],[3]	ProG	123							▙
3. Press [CODE] key.	[CODE]		123	CLEAr						▙
4. Press [CLEAR] key. *1)	[CLEAR]	ProG		C 19						▙

Note: *1) Press [MODE] key to go back to program mode without clearing.

4.2b Delete all item code

Procedure	Key-in	Weight	Unit Wt.	Quantity	Indicators					
					Z	N	G	I	R	P
Ready for operation		0.000	0	0	▙			▙		
1. Go to Program Mode.	[MODE]	ProG		C 20						▙
2. Enter [•],[•],[0] while pressing [RE-ZERO].	[RE-ZERO]+ [•],[•],[0]	ALL		CLEAr						▙
3. Press [CLEAR] key. *1)	[CLEAR]	ProG		C 0						▙

Note: *1) Press [MODE] key to go back to program mode without clearing.

4.2c Delete all Inventory Value from Memory

Procedure	Key-in	Weight	Unit Wt.	Quantity	Indicators					
					Z	N	G	I	R	P
Ready for operation		0.000	0	0	▙			▙		
1. Go to Program Mode.	[MODE]	ProG		C 1						▙
2. Enter [•],[•],[1] while pressing [RE-ZERO].	[RE-ZERO]+ [•],[•],[1]	INVENT		CLEAr						▙
3. Press [CLEAR] key. *1)	[CLEAR]	ProG		C 1						▙

Note: *1) Press [MODE] key to go back to program mode without clearing.

4.2d Delete all Unit Weight Value from Memory

Procedure	Key-in	Weight	Unit Wt.	Quantity	Indicators					
					Z	N	G	I	R	P
Ready for operation		0.000	0	0	▙			▙		
1. Go to Program Mode.	[MODE]	ProG		C 1						▙
2. Enter [•],[•],[2] while pressing [RE-ZERO].	[RE-ZERO]+ [•],[•],[2]	U. Wt		CLEAr						▙
3. Press [CLEAR] key. *1)	[CLEAR]	ProG		C 1						▙

Note: *1) Press [MODE] key to go back to program mode without clearing.

4.2e Delete all Tare Weight Value from Memory

Procedure	Key-in	Weight	Unit Wt.	Quantity	Indicators					
					Z	N	G	I	R	P
Ready for operation		0.000	0	0	▙			▙		
1. Go to Program Mode.	[MODE]	ProG		C 1						▙
2. Enter [•],[•],[3] while pressing [RE-ZERO].	[RE-ZERO]+[•],[•],[3]	TarE		CLEAr						▙
3. Press [CLEAR] key. *1)	[CLEAR]	ProG		C 1						▙

Note: *1) Press [MODE] key to go back to program mode without clearing.

4.2f Delete all parts numbers from Memory

Procedure	Key-in	Weight	Unit Wt.	Quantity	Indicators					
					Z	N	G	I	R	P
Ready for operation		0.000	0	0	▙			▙		
1. Go to Program Mode.	[MODE]	ProG		C 1						▙
2. Enter [•],[•],[4] while pressing [RE-ZERO].	[RE-ZERO]+[•],[•],[4]	P-NAmE		CLEAr						▙
3. Press [CLEAR] key.	[CLEAR]	ProG		C 1						▙

Note: *1) Press [MODE] key to go back to program mode without clearing.

4.2g Delete all setpoint data from Memory

Procedure	Key-in	Weight	Unit Wt.	Quantity	Indicators					
					Z	N	G	I	R	P
Ready for operation		0.000	0	0	▙			▙		
1. Go to Program Mode.	[MODE]	ProG		C 1						▙
2. Enter [•],[•],[5] while pressing [RE-ZERO].	[RE-ZERO]+[•],[•],[5]	P-SP		CLEAr						▙
3. Press [CLEAR] key.	[CLEAR]	ProG		C 1						▙

Note: *1) Press [MODE] key to go back to program mode without clearing.

4.2h Delete all Parts Name from Memory

Procedure	Key-in	Weight	Unit Wt.	Quantity	Indicators					
					Z	N	G	I	R	P
Ready for operation		0.000	0	0	▙			▙		
1. Go to Program Mode.	[MODE]	ProG		C 1						▙
2. Enter [•],[•],[6] while pressing [RE-ZERO].	[RE-ZERO]+[•],[•],[6]	P-nAmE		CLEAr						▙
3. Press [CLEAR] key.	[CLEAR]	ProG		C 1						▙

Note: *1) Press [MODE] key to go back to program mode without clearing.

4.2i Reset Sequence number to 0

Procedure	Key-in	Weight	Unit Wt.	Quantity	Indicators					
					Z	N	G	I	R	P
Ready for operation		0.000	0	0	▙			▙		
1. Go to Program Mode.	[MODE]	ProG		C 1						▙
2. Enter [•],[•],[7] while pressing [RE-ZERO].	[RE-ZERO]+ [•],[•],[7]	Seq No		CLEAr						▙
3. Press [CLEAR] key.	[CLEAR]	ProG		C 1						▙

Note: *1) Press [MODE] key to go back to program mode without resetting.

4.3 Review Item Code Already in Memory

An item code number in memory can be reviewed in program mode. Your scale has an internal setting that decides the character type for item code, numeric data only or alphanumeric data. If you use numeric data, refer to 4.3a Review numeric item code. If alphanumeric item code, refer to 4.3b Review alphanumeric item code.

4.3a Review numeric item code

Procedure	Key-in	Weight	Unit Wt.	Quantity	Indicators					
					Z	N	G	I	R	P
Ready for operation		0.000	0	0	▙			▙		
1. Go to Program Mode. * 1)	[MODE]	ProG		C 5						▙
2. Press [CODE] key.	[CODE]		123	CH1						▙
3. Check other Item Code by pressing [+] or [-]. *1)			371	CH2						▙
4. Press [MODE] key to escape.	[MODE]	ProG		C 5						▙

Note *1) [+] key is for advances to the next code. [-] key is to go back to the previous displayed code.

4.3b Review alphanumeric item code

Procedure	Key-in	Weight	Unit Wt.	Quantity	Indicators					
					Z	N	G	I	R	P
Ready for operation		0.000	0	0	▙			▙		
1. Go to Program Mode. * 1)	[MODE]	ProG		C 5						▙
2. Press [CODE] key.	[CODE]	t-C 01	01- A	CH1						▙
3. Move cursor.	[PCS] or [TARE]	t-C 02	03- C	CH1						▙
3. Check other Item Code by pressing [+] or [-]. *1)		t-C 01	31- 1	CH2						▙
4. Press [MODE] key to escape.	[MODE]	ProG		5						▙

Note *1) [TARE] key is for advances to the next digit. [PCS] key is to go back to the previous digit.
Note *2) [+] key is for advances to the next code. [-] key is to go back to the previous displayed code.

4.4 Program Set point to operate all items

General setpoint value can be programmed to operate on all items. This value is enabled when no code number is selected or the item code re-called in operation mode has no setpoint data.

Procedure	Key-in	Weight	Unit Wt.	Quantity	Indicators					
					Z	N	G	I	R	P
Ready for operation		0.000	0	0	▙			▙		
1. Go to Program Mode. * 1)	[MODE]	ProG		C 0						▙
2. Press [+] key.	[+]	SET 1		0						▙
3. Enter Setpoint 1 value.	[1], [0], [0]	SET 1		100						▙
4. Press [+] key.	[+]	SET 2		0.						▙
5. Enter Setpoint 2 value. E.g.50%	[5], [0]	SET 2		50						▙
6. Press [+] key.	[+]									▙
7. If required, enter Setpoint 3-6.										▙
8. Store the data.	[ENTER]	ProG		C 0						▙

Note) Your scale has an internal setting that decides the number of set points, from 2 set points to 6 set points.

4.5 Set Date and Time

Procedure	Key-in	Weight	Unit Wt.	Quantity	Indicators					
					Z	N	G	I	R	P
Ready for operation		0.000	0	0	▙			▙		
1. Go to Program Mode. * 1)	[MODE]	ProG		C 0						▙
2. Press [-] key twice.	[-]	30-06	98-MoN	21:28						▙
	[-]	EntEr	D-M-Y	280798						▙
3. Enter the date, month, year.	[3], [1], [0], [7], [9],[8]	EntEr	D-M-Y	310798						▙
4. Press [-] key.	[-]	MON-S	UN 0-6	0						▙
5. Enter day of a week. [Friday] *1)	[4]	MON-S	UN 0-6	4						▙
6. Press [-]	[-]	EntEr	TIME	0						▙
7. Enter the current time	[1],[4],[2],[1]	EntEr	TIME	1421						▙
8. Store the data.	[ENTER]	ProG		C 0						▙

Note *1) a digit numeric that represents the day of the week as following table.

Number	Day of week
0	Monday
1	Tuesday
2	Wednesday
3	Thursday

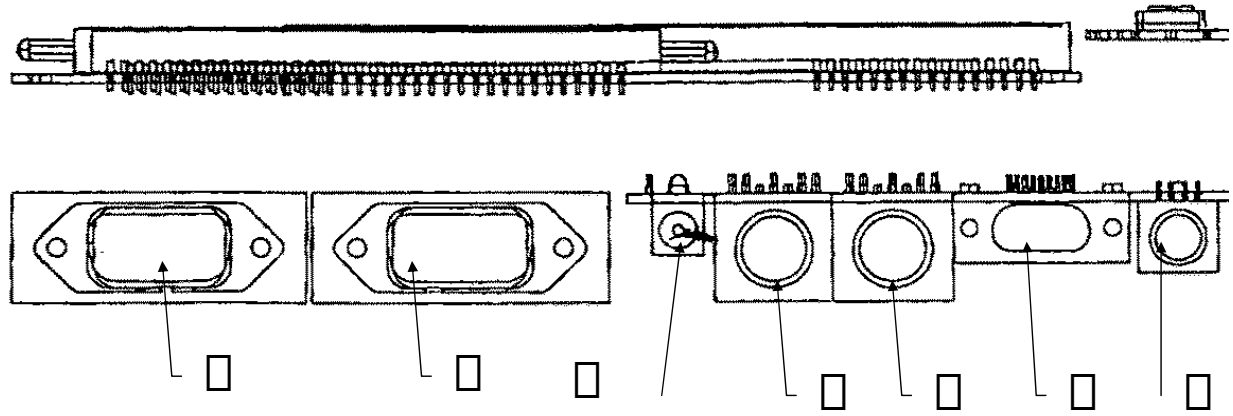
Number	Day of week
4	Friday
5	Saturday
6	Sunday

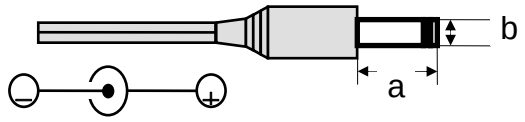
APENDIX 1

Code	Chara.	Code	Chara.	Code	Chara.	Code	Chara.	Code	Chara.
00	Space	20	**T**	40	**@**	60		80	
01	**A**	21	**U**	41	**!**	61		81	
02	**B**	22	**V**	42	**“**	62		82	
03	**C**	23	**W**	43	**#**	63		83	
04	**D**	24	**X**	44	**$**	64		84	
05	**E**	25	**Y**	45	**%**	65		85	
06	**F**	26	**Z**	46	**&**	66		86	
07	**G**	27	**,**	47	**/**	67		87	
08	**H**	28	**.**	48	**(**	68		88	
09	**I**	29	**-**	49	**)**	69		89	
10	**J**	30	**0**	50	**‘**	70		90	
11	**K**	31	**1**	51	**Æ**	71		91	
12	**L**	32	**2**	52	**Ä**	72		92	
13	**M**	33	**3**	53	**Ø**	73		93	
14	**N**	34	**4**	54	**Ö**	74		94	
15	**O**	35	**5**	55	**Ã**	75		95	
16	**P**	36	**6**	56	**Ê**	76		96	
17	**Q**	37	**7**	57	**Á**	77		97	
18	**R**	38	**8**	58		78		98	
19	**S**	39	**9**	59		79		99	**CR**

APENDIX 2

Connectors of DC-190 series



#	Connector	Usage
1	Amphenol 14 pin	Internal Scales
2	Amphenol 14 pin	External Scales
3	DIN 8 PIN (RS-232C)	Bar-code Reader
4	DIN 8 PIN (RS-232C)	Force Balance, Printer, or PC
5	D-SUB 9 PIN (RS-232C)	Force Balance, Printer, or PC
6	24V Open Collector	Setpoint Output
7	 a): 9.5± 0.5mm b): Inside (-) 2.1± 0.5mm Outside (+) 5.5± 0.5mm	DC Power Input The power block is located in the scale unit of DC-190. When connecting two external scales without the scale unit of DC-190, the AC/DC adapter is required for power supply.